

GROWTH OF THE UNDERGROUND ECONOMY, 1950-81:
SOME EVIDENCE FROM THE CURRENT POPULA-
TION SURVEY

A STUDY

PREPARED FOR THE USE OF THE

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LETTER OF TRANSMITTAL

DECEMBER 1, 1983.

To the Members of the Joint Economic Committee:

I am pleased to transmit for the use of the Joint Economic Committee a study entitled "Growth of the Underground Economy, 1950-81: Some Evidence From the Current Population Survey," by Dr. David M. O'Neill, Chief, Socioeconomic Studies Branch, the U.S. Bureau of the Census.

The size of the underground economy—economic transactions which take place out of sight of tax collectors and government regulators—has been a topic of hot dispute for many years. Some estimates place it at as much as 20 percent of GNP—some \$600 billion. However, these estimates rely on data and methodologies whose accuracy are highly suspect. Therefore, Dr. O'Neill's research, which is based directly on the current population survey, can be considered the most reliable study yet done of the underground economy.

Dr. O'Neill finds that while the underground economy may not be as large as some people estimate, it is, nevertheless, quite large. This suggests that further efforts to reduce high marginal tax rates and to eliminate onerous government regulations could yield significant returns at the expense of the underground economy.

Sincerely,

ROGER W. JEPSEN,
Chairman, Joint Economic Committee.

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GROWTH OF THE UNDERGROUND ECONOMY, 1950-81: SOME EVIDENCE FROM THE CURRENT POPULATION SURVEY

BY DAVID M. O'NEILL *

INTRODUCTION AND SUMMARY

Existing empirical evidence on the size and character of the underground economy (UE) is very indirect and tenuous in the extreme. One would not suspect this from reading the many popular articles on the subject. The UE is colorful and the temptation to gloss over the validity of the statistical evidence is strong. Estimates of the size of the UE relative to the Gross National Product (GNP) vary from a high of over 20 percent to a low of under 5 percent. The reason for this disparity is that the UE is very difficult to measure with existing survey methods. Indeed it is one of the most difficult aspects of social behavior to measure.

The fundamental problem is participants in the UE have powerful incentives to conceal their incomes, not only from the police and IRS, but from any survey takers that might come along. There is no way to directly survey the entire UE, the way firms and households are surveyed to measure the "above-ground" economy. A number of measurement approaches have developed to fill this void. Some are very indirect approaches which attempt to measure the entire UE, but yield estimates that are very imprecise and perhaps unreliable.¹ At the other extreme is a more direct method used by the Internal Revenue Service (IRS).² This more direct approach measures certain components of the UE very well but it may be missing a big component. Another approach is to survey households on their expenditures for items purchased from and paid for in "informal situations," where cash was used and/or the seller or provider appeared to be "working on the side."³

In this paper yet another indirect method for measuring the growth in the UE is described and some estimates of this growth are derived. It makes use of a very familiar data source—the Current Population Survey—in combination with assumptions about trends in various determinants of the official measures of labor force participation—unemployment and employment. As with the other indirect methods our estimates are also imprecise and perhaps unreliable. The main justification for making them is that they utilize a completely different data framework and assump-

* Dr. O'Neill is Chief, Socioeconomic Studies Branch, the U.S. Bureau of the Census.

¹ Edward Feige, "A New Perspective on Macroeconomic Phenomenon" (Mimeo August 1980).

² "Estimates of Income Unreported on Individual Income Tax Returns," Internal Revenue Service, publication 1104 (9-79).

³ The University of Michigan recently conducted a survey of households in an attempt to measure some aspects of the UE. This study is discussed below.

tions, and thereby may stimulate critical review, which may in turn add to our shakey knowledge about the UE.

We conclude that the average annual growth rate in official GNP understated the average annual growth rate in total market production by between 0.1 and 0.4 percentage points in the period 1950-81. We also conclude that it is unlikely that the previous indirect estimates that put the unmeasured UE at near 20 percent of official GNP are valid. After briefly reviewing the existing evidence on the size of the UE, our methodology and data are presented.

EXISTING EVIDENCE ON THE UE

Concern about the UE arises from two sources—nonpayment of taxes and mismeasurements of important economic and social statistics like GNP and the unemployment rate. And although these two domains of concern overlap, they are not identical. The reason is that a part of what the IRS considers the UE, is currently measured in the official GNP accounts. For example, in 1976 the IRS estimated that between \$7.5 and \$14.5 billion of interest and dividend income was unreported to the IRS by individuals with a tax liability. However, this income did not elude official GNP. Data that cover this unreported income is gathered from the industrial and financial firms who paid it to the individuals who did not report it to the IRS. Thus, there is ample data to measure and include them in the GNP accounts. Some of the wage and salary and self-employment income that is unreported to the IRS is also covered in the official GNP accounts.⁴ Thus, the total amount of taxable income unreported to the IRS, which is how the IRS defines the UE, is significantly larger than the unreported taxable income not measured by official GNP.

Our estimates will correspond to this completely unknown part of the UE—i.e., that part not measured in the current GNP accounts. We will call it the "Unmeasured UE" (UNUE). It corresponds more closely to the popular image of the UE—individuals selling their services, earning income and reporting nothing to the IRS and possibly dealing only in cash in order to cover up any trail the IRS might utilize.

Individuals in the UNUE can earn all their income in activities they try to hide from the IRS and therefore they would file no tax returns. Or they may work in the UNUE on-the-side, while holding down a job in the above-ground economy on which taxes are withheld and/or they submit a tax return. Because of the separate nature of the two jobs the IRS's TCMP program is unlikely to measure much of this unreported income.

Another important distinction within the UNUE is between "legal source" and "illegal source" activity. Illegal source activity, includes only consensual crime-gambling, prostitution, and illegal drugs. Some argue for including crimes like theft and burglary but this raises very thorny conceptual problems—e.g., how should you

⁴ These estimates of unreported taxable earnings are derived by the IRS as part of their Taxpayers Compliance Measurement Program (TCMP). This program analyzes the tax returns of a sample of individual taxpayers via indepth interviews. This process leads to the above cited estimates of unreported taxable income. Note that this procedure only covers individuals who file tax returns, those who do not file are not captured by this program.

account for the economic and noneconomic cost of the victim? "Legal source" activities cover, in principle, any activity that could be observed in the above-ground economy as long as it is not captured by the official GNP accounts. However, in practice legal source activities mostly consist of the provision of those services that do not involve very large capital outlays or a large labor force—home repairs and maintenance, auto repairs, appliance repair, housekeeping services, casual retailing, etc.

There have been some studies of both the UE and the UNUE. What is the existing evidence in the size of the UNUE? For 1976, the IRS published estimates of taxable income unreported to the IRS, that can be adjusted to exclude unreported taxable income included in GNP. The IRS estimated income generated in the illegal source activities of gambling, prostitution, and drugs at \$30 billion, or 1.7 percent of GNP in that year. Unreported income from legal source activities (not included in GNP) was \$31.1 billion or 1.7 percent GNP. So the IRS estimate of the total UNUE was 3.4 percent GNP in 1976. By the IRS estimate, the UNUE does not look that large. However, some researchers disagree.

The works of Gutmann and Feige⁵ suggest that the IRS estimate is considerably on the low side. Gutmann estimates a figure of \$176 billion for the UNUE in 1976, while Feige estimated \$330 billion. Thus, on Feige's estimate, official GNP understated total market output by about 16 percent. Thus, the gap between Feige and IRS for 1976 is large—16 percent versus 3.4 percent. And Feige's estimates show a rapidly increasing UNUE relative to GNP after 1976.

Both Gutmann and Feige use very indirect and imprecise approaches to measuring the UNUE. The potential benefit of their imprecise approaches is that they can, in principle, capture the UNUE in its entirety. Gutmann's method uses the ratio of currency to demand deposits as the key indicator of the UNUE. This ratio has grown steadily since 1960, so by 1976 it stood considerably above its value in 1939; 1939 is Gutmann's base year, i.e., zero UNUE. He asserts that the excess of the currency/demand deposit ratio in 1976 over its value in 1939 represents the cash being used in the UNUE. This is combined with an assumption about the income velocity of cash to derive his estimate of the size of the UNUE for 1976. Feige's method uses the ratio of his estimate of the dollar value of all transactions in the total economy (i.e., all transactions involving GNP plus UNUE including sales of intermediate goods plus all nonincome generating transactions) to nominal GNP. Feige argued that the excess of this ratio over its value in 1939 represents the growth in the UNUE between the 2 years because there is no evidence to show that the ratio of intermediate and nonincome transactions to official GNP has changed over the period. The work of each of these authors has been subjected to very critical scrutiny that raises questions about the reliability of their respective methodologies.⁶

⁵ Feige, Edward L., op.cit.

Gutmann, Peter, M., "The Subterranean Economy," *Financial Analysis Journal*, November/December 1977.

⁶ Garcia, Gillian, "The Currency Ratio and the Subterranean Economy," *Financial Analysts Journal*, November/December 1978, pp. 64-66.

Porter, Richard D., "Some Notes on Estimating the Underground Economy" (Mimeo August 1979).

Two other studies that use quite different indirect approaches do not uncover evidence for the large and rapidly growing UNUE suggested by Gutmann and Feige.⁷ Denison's study compares rates of change in labor force participation rates (from the CPS) of different sociodemographic groups in different time periods. Changes during time periods when the UNUE is thought to have grown more rapidly were compared to those during which it was not. The expected association was not found in most cases—i.e., the greatest increases (or least decreases) in labor force participation rates were in the subperiods in which the UNUE was thought to be growing most rapidly.

Smith surveyed households on the annual amount they spent on items involving a transaction with an informal supplier and/or cash (e.g., buying fruit from the back of a truck). The total of these transactions (estimated for the total U.S.) did not exceed 1 percent of GNP in the same year.

Unfortunately both the Smith and Denison studies suffer from drawbacks at least as important as those that mar the Feige and Gutmann studies. Denison makes very ad-hoc assumptions about what the behavior of labor force participation would have in the absence of UE growth. The Smith study is based on a very small sample and suffers from the problem of imperfect recall that plagues all surveys of consumer expenditure that rely on the memory of household members.

In sum, the existing evidence is very inconclusive on the size of the UNUE. Our methodology and data will perhaps reduce the range of uncertainty somewhat.

EVIDENCE FROM THE CPS

The CPS is a large scientific sample of the dwelling units in the United States. Its target population is all families and unrelated individuals. From the sample data the proportions of individuals (16+) who reported themselves as employed, unemployed or not in the labor force during the week prior to the survey are calculated. To estimate the absolute number in each category for the United States, the census multiplies an estimate of the population 16+ by the fractions measured in the sample. Thus if the sample yielded 0.6, 0.1, and 0.3 as the fractions employed, unemployed and not in the labor force in the sample, and the population 16+ was estimated at 170 million, then total employment is 102 million ($=0.6 \times 170$ million), total unemployment is 17 million and total not in the labor force is 51 million.⁸

How would growth in the UNUE affect the employment, unemployment and not in the labor force estimates of the CPS? Important considerations are the degree to which individuals in the UNUE are approached by the CPS, how much they agree to participate, and how they respond to the CPS questions when they do

⁷ James D. Smith, "The Measurement of Selected Income Flows in Informal Markets," Survey Research Center, Institute for Social Research, The University of Michigan, Ann Arbor, Mich. Ed Denison, "Is U.S. Growth Understated Because of the Underground Economy," *The Review of Income and Wealth*, March 1982.

⁸ In practice, the CPS makes these calculations for a large number of age, sex, race categories, as well as numerous economic categories—industry, occupation, class of worker, etc.

participate. It is also important to distinguish between full-time and part-time UNUE participants.

Full-time participants who do not take part in the CPS either because they refuse when approached or they avoid being approached, may or may not cause the CPS employment series to understate the trend in total employment—i.e., employment in the above-ground economy plus employment in the UNUE. It depends on whether or not they are counted in the decennial censuses. Thus if we assume that they will be counted in the population estimates, then their nonparticipation in the CPS will only bias the CPS estimate because their employment to population fraction is greater than those included in the CPS sample. However, the net downward bias will be small.⁹ On the other hand, if they are not counted in the censuses, then the bias would be equal to the total number who are not counted.

Will the censuses cover all those UNUE participants who do not participate in the CPS? One cannot say yes for sure. The censuses make very elaborate efforts to count everyone in the population, and participation in the censuses is mandated by law, while the CPS is not. Thus, it is likely that the census does count most of the people who refuse to participate in the CPS. These people have been approached by the CPS and are accessible to that extent. The problem is that we do not know how many UNUE participants avoid being approached by the CPS altogether. If this group is large and they also avoid the census, then our estimates of the UNUE will be downward biased. However, it is possible to make a rough estimate of this bias by using data on trends in the CPS refusal rate, which we present at the end.

Full-time individuals who do participate in the CPS have, ironically, probably more potential to bias CPS statistics than those who do not. Those who respond that they are employed, of course, cause no bias. However, those employed UNUE participants who respond they are unemployed or out of the labor force cause a bias in all CPS statistics—the employment series will be biased down and the unemployment and not in the labor force series will be biased upward, vis-a-vis the true figures for the total economy.

Given growth in the relative number of full-time UNUE participants, can the observed trends in the CPS statistics be used to derive a measure of this growth? We know in general that the observed growth in CPS employment will contain some of the growth in full-time UNUE participants. If a series were available that contained only employment in the above-ground economy, then we could obtain a measure of this component of the UNUE growth by observing how much the ratio of the CPS employment estimate to the other series has risen over the time period. The components of the full-time UNUE growth that raised CPS unemployment and not-in-the labor force levels are more complicated to detect. They require either estimating, or making assumptions about, how the two CPS components would have behaved in the absence of any relative growth in the full-time UNUE.

⁹ If we assume that all full-time UNUE participants are employed (i.e., their employment to population ratio is 1), then even their total nonparticipation will lower the CPS ratio below the true ratio by not more than 1 percentage point.

Turning now to growth in part-time UNUE participants, we find that they are in a significantly different situation vis-a-vis the CPS than are full-time participants. Recall that part-time participants are workers who have a main job in the above-ground economy on which they file a tax return and/or have taxes withheld, and work in the UNUE on-the-side. With an above-ground job to report to the CPS, there is little reason to think that part-time participants would behave any differently toward the CPS than workers who do not participate in the UNUE at all. Unfortunately, from the point of view of measuring growth in the total UNUE, the growth in their employment in the CPS will be matched by growth in jobs in the above-ground economy. Thus, the technique of comparing the CPS employment series with an employment series restricted to above-ground jobs, does not work for part-time UNUE participants, and it would appear unlikely that part-time participants would volunteer their on-the-side UNUE activity to the CPS survey. These UNUE participants have, in effect, a perfect "cover"—i.e., their above-ground job.¹⁰

Thus, we have no way of using CPS trends to infer anything about the growth in the part-time component of the UNUE. We will have to make a range of assumptions about its growth in order to make estimates for the growth in the total UNUE. To estimate changes in full-time participants we first analyze trends in the CPS employment measures and then in CPS unemployment and labor force participation rates.

CPS Employment Levels

The above analysis showed that growth in full-time UNUE participants who either do not participate in the CPS or who participate and respond they are employed, will cause the CPS employment series to rise relative to a series that just measured jobs or employment in the above-ground economy. This additional growth in the CPS series has two components—a "wage and salary worker component" and a "self-employed worker component" as these are the two ways a full-time UNUE participant who does participate in the CPS can describe his employment situation. We consider these two components separately because we cannot obtain a single series that contains all wage and salary plus all self-employed workers that are restricted to the above-ground economy.

It is possible to make an estimate of the wage and salary worker component by using the Bureau of Labor Statistics' series on payroll employment in nonagricultural establishments. There have been two studies of the differences in coverage between the CPS household based and the BLS payroll based series.¹¹ A number of adjustments were made to the CPS series so that the longrun trends in the two series should be influenced by the same factors, except for growth in the full-time UNUE, which would only affect the CPS series.

¹⁰ CPS data show that the fraction of workers who do report second jobs has remained about constant since the 1950.

¹¹ Alexander Korn, "Cyclical Fluctuations in the Difference Between the Payroll and Household Measures of Employment," *Survey of Current Business*, vol. 59, No. 5, May 1979, pp. 15-44.

Gloria Green, "Comparing Employment Estimates From Household and Payroll Surveys," *Monthly Labor Review*, December 1989, pp. 9-20.

Table 1 shows the ratio of the CPS based estimate of nonagricultural payroll employment to the official BLS figure that is based on the actual establishment payrolls. The overall level of the BLS figure is generally higher because of dual job holders, and payroll clearance lags. Dual job holders are only counted once in the CPS, but will account for more than one job slot in the payroll data. A very small but steady uptrend in the ratio of the CPS series to the payroll based series is evident, suggesting some growth in the full-time UNUE.

TABLE 1.—ESTIMATED NUMBER OF WAGE AND SALARY WORKERS ON THE PAYROLLS OF
NONAGRICULTURAL EMPLOYERS: CPS BASED ¹ AND PAYROLL BASED ²

Year	CPS-based estimate	Payroll-based estimate	Ratio (1)/ (2)
	(1)	(2)	(3)
1957.....	48,719	52,853	.922
1958.....	47,842	51,324	.932
1959.....	49,196	53,268	.923
1960.....	50,404	54,189	.930
1961.....	50,640	53,999	.938
1962.....	52,007	55,549	.936
1963.....	53,260	56,653	.940
1964.....	54,871	58,283	.941
1965.....	56,972	60,765	.937
1966.....	59,373	63,901	.929
1967.....	61,862	65,803	.940
1968.....	63,453	67,897	.934
1969.....	65,521	70,384	.931
1970.....	66,365	70,880	.936
1971.....	66,852	71,214	.939
1972.....	69,889	73,675	.949
1973.....	72,071	76,790	.938
1974.....	74,220	78,265	.948
1975.....	73,461	76,945	.955
1976.....	76,233	79,382	.960
1977.....	79,197	82,471	.960
1978.....	82,829	86,697	.955
1979.....	85,313	89,823	.950
1980.....	85,615	90,406	.947
1981.....	86,660	91,105	.951

¹ For 1981-72 the CPS figure for nonagricultural wage and salary workers 16+ was reduced by the number of private household workers and the number of workers on unpaid absences; 14- to 15-year-olds in nonagricultural wage and salary jobs outside private households were added in. Employment figures incorporating the adjusted population estimates based on the 1980 census were used; Employment and Earnings January 1983. For 1957-71, this same concept was estimated by Korns, Survey of Current Business, May 1979, p. 15.

² Employment and Earnings, January 1983, table B-1, p. 71.

However, before concluding that this trend represents UNUE growth other factors that may have affected the ratio must be considered. A major one is the trend in improvement in the coverage of both series. The censuses provide the CPS with benchmark estimates of the population every 10 years. Thus, the growth in ratio in Table 1 may partially reflect growing improvement of coverage in subsequent censuses. Additionally, there have been improvements in the BLS payroll series over time as well.

For lack of better knowledge we take the entire increase in the ratio as reflecting growth in full-time UNUE participants. This will overestimate UNUE growth if the trend in improved coverage of the BLS payroll series was less than that of the CPS series, and underestimate it if the opposite is true. Over the period 1957-69, the ratio

averaged 0.093 and over the period 1967-81, it was 0.95. Therefore, we took 0.02 times our CPS based estimate of wage and salary workers on nonagricultural payrolls in 1981 (86.6 million) as our estimate of the full-time UNUE growth reflected in the growth of the CPS series in excess of the BLS series. This came to 1.7 million persons.

The other component of UNUE growth influencing CPS employment levels would impact on the self-employment component of total employment. This would result when some of the UNUE participants who took part in the CPS answered they were employed and in their own business. The CPS series on total self-employed workers actually shows a 13 percent decline between 1960 and 1978. This would be consistent with UNUE growth if the decline reflected shifts within the above-ground economy. In order to detect any UNUE growth in this CPS change, we need a series restricted to self-employed individuals who are in the above-ground economy. However, the statistics which might serve this purpose, the IRS series on proprietor and partnership tax returns, increased by 32 percent. Since the CPS series declined by 13 percent, this would imply a sharp decline in a segment of the UNUE. It seems highly unlikely that any subgroup of the UNUE declined so we must reject the IRS data.

Fortunately there exists a special data file put together by the IRS that provides an estimate of UNUE participants who responded to the CPS they were self-employed. This data set is known as the "Exact Match File." The records in the CPS were linked to IRS and social security records for the same individual using their social security numbers. Thus, it was possible to identify individuals who said they were self-employed to the CPS, reported taxable income but filed no tax return with the IRS. For 1976, these delinquent nonfilers amounted to about 10 percent of all self-employed in the CPS. For a variety of reasons this percentage significantly overstates the growth in UNUE from this source¹² but we will use the entire 10 percent. In 1981 there were 7 million self-employed individuals in the nonagricultural sector, so our estimate of this component of the full-time UNUE is 700,000. Note that this component includes the change between 1950 and 1981 plus any self-employed UNUE participants who existed in 1950.

Labor Force and Unemployment Rates

The analysis of the unemployed and not in the labor force series is more conjectural than the employment level analysis. It cannot be based on comparisons with other series that are restricted to nonemployed individuals who are not in the UNUE—no series exist on these individuals other than the CPS series themselves. We proceed by examining the actual trends in the CPS series and see if any movements can be detected that might correspond to an effect of growth in the full-time UNUE.

Tables 2 and 3 show CPS labor force participation and unemployment rates by age, sex, and color categories for 1954 through 1981.

¹² A major problem is that a large fraction of incomes reported in the CPS were imputed rather than from actual responses.

For labor force participation rates, the most dramatic change was for adult females. The sharp increase reflects the well-known shift of women's work activities from work in the home to work in the market since World War II. Unfortunately, these strong uptrends prevent us from analyzing female UNUE trends with the labor force participation data. To detect the negative effect of the UNUE growth on the female rate would require an estimate of what the increase in the CPS female rate would have been in the absence of growth in the UNUE. This is a task beyond the scope of this study. Instead, one-half of the estimate of UNUE trends from the analysis of male participation rate trends will be used for the female UNUE growth as reflected in this CPS series.

TABLE 2.—LABOR FORCE PARTICIPATION RATES BY SEX AND AGE: 1954-80

Sex, year, and race	Years—									
	Total 16 and over	16 and 17	18 and 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 and over	14 and 15
MALE										
1954.....	85.5	47.1	71.5	87.0	97.3	98.1	96.5	88.7	40.5	24.5
1955.....	85.3	48.1	72.2	86.8	97.6	98.1	96.5	87.9	39.6	24.0
1956.....	85.5	51.0	72.5	87.8	97.3	97.9	96.5	88.5	40.0	26.6
1957.....	84.8	49.3	71.7	87.0	97.1	97.9	96.3	87.8	35.6	23.8
1958.....	84.2	46.5	69.7	86.9	97.1	97.9	96.3	87.8	35.6	23.8
1959.....	83.7	45.0	70.6	88.8	97.4	98.8	96.0	87.4	34.2	24.2
1960.....	83.3	46.0	69.3	88.1	97.5	97.7	95.7	86.8	33.1	22.3
1961.....	82.9	44.1	66.8	87.8	97.5	97.6	95.6	87.3	31.7	21.8
1962.....	82.0	42.6	66.7	86.9	97.2	97.6	95.6	86.2	30.3	21.6
1963.....	81.4	41.8	68.0	86.1	97.1	97.5	95.7	86.2	28.4	20.9
1964.....	81.0	42.8	66.7	86.1	97.3	97.3	95.7	85.6	28.0	20.8
1965.....	80.7	43.9	65.9	85.8	97.3	97.3	95.6	84.6	27.9	21.4
1966.....	80.4	46.3	65.2	85.1	97.3	97.2	95.3	84.5	27.5	21.6
1967.....	80.4	47.0	65.6	84.4	97.2	97.3	95.2	84.4	27.1	22.2
1968.....	80.1	46.4	65.4	82.8	96.9	97.1	94.9	84.3	27.3	22.1
1969.....	79.8	47.3	65.9	82.8	96.7	96.9	94.6	83.4	27.2	22.0
1970.....	79.7	47.0	66.7	83.3	96.4	96.9	94.2	83.0	26.8	22.0
1971.....	79.1	46.9	66.6	83.0	96.0	96.5	93.9	82.2	25.5	22.5
1972.....	79.0	47.9	69.6	83.9	95.7	95.7	96.4	93.2	80.5	24.4
1973.....	78.8	50.0	70.8	85.3	95.7	96.2	93.0	78.3	22.8	22.3
1974.....	78.7	50.6	72.1	86.0	95.9	96.0	92.2	77.4	22.4	23.0
1975.....	77.9	48.6	70.7	84.6	95.3	95.6	92.1	75.8	21.7	21.5
1976.....	77.5	48.5	71.0	85.2	95.3	95.4	91.6	74.5	20.3	20.9
1977.....	77.7	50.3	72.5	85.7	95.4	95.7	91.2	74.0	20.1	23.0
1978.....	77.9	51.9	73.0	86.0	95.4	95.7	91.3	73.5	20.5	23.2
1979.....	77.9	51.6	72.1	86.6	95.4	95.8	91.4	73.0	20.0	22.2
1980.....	77.4	50.1	71.5	86.0	95.3	95.5	91.2	72.3	19.1	20.5
FEMALE										
1954.....	34.6	28.7	50.4	45.1	34.4	41.2	41.1	30.1	9.3	11.2
1955.....	35.7	28.9	50.9	45.9	34.9	41.9	43.8	32.5	10.6	11.9
1956.....	36.9	32.8	51.9	46.3	35.4	43.1	45.5	34.9	10.8	12.5
1957.....	36.9	31.1	51.4	45.9	35.6	43.3	46.5	34.5	10.5	12.1
1958.....	37.1	28.1	50.8	46.3	35.6	43.3	47.8	35.2	10.3	12.9
1959.....	37.1	28.8	48.9	45.1	35.3	43.3	49.0	36.6	10.2	12.6
1960.....	37.7	29.1	50.9	46.1	36.0	43.4	49.3	37.2	10.8	12.8
1961.....	38.1	28.5	51.0	47.0	36.4	43.8	50.1	37.9	10.7	13.5
1962.....	37.9	27.1	50.8	47.3	36.3	44.1	50.0	38.7	9.9	13.0
1963.....	38.3	27.1	50.5	47.5	44.9	50.6	39.7	9.6	11.8	11.8
1964.....	38.7	27.4	49.2	49.4	37.2	45.0	51.4	40.2	10.1	11.8
1965.....	39.3	27.7	49.3	49.9	38.5	46.1	50.9	41.1	10.0	12.5
1966.....	40.3	30.7	52.0	51.4	39.8	46.9	51.7	41.8	9.6	13.8
1967.....	41.1	31.0	52.2	53.3	41.9	48.1	51.8	42.8	9.6	14.7

TABLE 2.—LABOR FORCE PARTICIPATION RATES BY SEX AND AGE: 1954-80—Continued

Sex, year, and race	Years—									
	Total 16 and over	16 and 17	18 and 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 and over	14 and 15
1968.....	41.6	31.7	52.4	54.5	42.6	48.9	52.3	42.4	9.6	14.8
1969.....	42.7	33.7	53.4	56.7	43.7	49.9	53.8	43.1	9.9	14.9
1970.....	43.3	34.9	53.6	57.7	45.0	51.1	54.4	43.0	9.7	16.8
1971.....	43.3	34.3	53.1	57.7	45.5	51.6	54.3	42.9	9.5	15.2
1972.....	43.9	36.6	55.5	59.0	47.6	52.0	53.9	42.1	9.3	16.5
1973.....	44.7	39.1	56.9	61.1	50.1	53.3	53.7	41.1	8.9	17.2
1974.....	45.6	40.4	58.1	63.0	52.4	54.7	54.6	40.7	8.2	17.4
1975.....	46.3	40.2	58.1	64.1	54.6	55.8	54.6	41.0	8.3	16.8
1976.....	47.3	40.7	59.0	65.0	57.1	57.1	55.0	41.1	8.2	16.8
1977.....	48.4	42.2	60.5	66.5	59.5	59.5	55.8	41.0	8.1	18.7
1978.....	50.0	45.5	62.1	68.3	62.1	61.6	57.1	41.4	8.4	19.7
1979.....	51.0	45.8	62.9	69.1	63.8	63.6	58.4	41.9	8.3	18.7
1980.....	51.6	43.8	62.1	65.0	65.4	65.5	59.9	41.5	8.1	16.3

Source: "Employment and Training Report of the President," transmitted to Congress 1981, table A-5, p. 126.

TABLE 3.—UNEMPLOYMENT RATES OF MALES BY COLOR AND AGE: 1951-80

Sex, year, and race	Years—									
	Total, 16 and over	16 and 17	18 and 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 and over	14 and 15
WHITE										
1951.....	2.6	9.5	6.7	3.6	2.0	1.8	2.2	2.7	3.4	4.7
1952.....	2.5	10.9	7.0	4.3	1.9	1.7	2.0	2.3	2.9	5.5
1953.....	2.5	8.9	7.1	4.5	2.0	1.8	2.0	2.7	2.3	4.6
1954.....	4.8	14.0	13.0	9.8	4.2	3.6	3.8	4.3	4.2	4.9
1955.....	3.7	12.2	10.4	7.0	2.7	2.6	2.9	3.9	3.8	5.1
1956.....	3.4	11.2	9.7	6.1	2.8	2.2	2.8	3.1	3.4	6.1
1957.....	3.6	11.9	7.1	7.1	2.7	2.5	3.0	3.4	3.2	6.8
1958.....	6.1	14.9	16.5	11.7	5.6	4.4	4.8	5.2	5.0	7.9
1959.....	4.6	15.0	13.0	7.5	3.8	3.2	3.7	4.2	4.5	7.2
1960.....	4.8	14.6	13.5	8.3	4.1	3.3	3.6	4.1	4.0	8.1
1961.....	5.7	16.5	15.1	10.0	4.9	4.0	4.4	5.3	5.2	8.0
1962.....	4.6	15.1	12.7	8.0	3.8	3.1	3.5	4.1	4.1	7.6
1963.....	4.7	17.8	14.2	7.8	3.9	2.9	3.3	4.0	4.1	7.9
1964.....	4.1	16.1	13.4	7.4	3.0	2.5	2.9	3.5	3.6	7.7
1965.....	3.6	14.7	11.4	5.9	2.6	2.3	2.3	3.1	3.4	7.1
1966.....	2.8	12.5	8.9	4.1	2.1	1.7	1.7	2.5	3.0	7.6
1967.....	2.7	12.7	9.0	4.2	1.9	1.6	1.8	2.2	2.7	8.9
1968.....	2.6	12.3	8.2	4.6	1.7	1.4	1.5	1.7	2.8	8.3
1969.....	2.5	12.5	7.9	4.6	1.7	1.4	1.4	1.7	2.1	8.5
1970.....	4.0	15.7	12.0	7.8	3.1	2.3	2.3	2.7	3.2	10.1
1971.....	4.9	17.1	13.5	9.4	4.0	2.9	2.8	3.2	3.4	10.8
1972.....	4.5	16.4	12.4	8.5	3.4	2.5	2.5	3.0	3.3	10.7
1973.....	3.7	15.1	10.0	6.5	3.0	1.8	2.0	2.4	2.9	10.7
1974.....	4.3	16.2	11.5	7.8	3.5	2.4	2.2	2.5	3.0	11.9
1975.....	7.2	19.7	17.2	13.2	6.3	4.5	4.4	4.1	5.0	13.0
1976.....	5.4	19.7	15.5	10.9	5.6	3.7	3.7	4.0	4.8	13.7
1977.....	5.5	17.6	13.0	9.3	5.0	3.1	3.0	3.3	4.9	14.4
1978.....	4.5	16.9	10.8	7.6	3.7	2.5	2.5	2.6	3.9	14.4
1979.....	4.4	16.1	12.3	7.4	3.6	2.5	2.5	2.5	3.1	14.2
1980.....	6.1	18.5	14.6	11.1	6.0	3.6	3.3	3.1	2.5	14.1
BLACK AND OTHER										
1951.....	4.9	8.7	9.6	6.7	5.5	3.4	3.6	4.1	4.7	4.9
1952.....	5.2	8.0	10.0	7.9	5.5	4.4	4.2	3.7	4.7	5.5
1953.....	4.8	8.3	8.1	8.1	4.3	3.6	5.1	3.6	3.1	5.1
1954.....	10.3	13.4	14.7	16.9	10.1	9.0	9.3	7.5	7.5	5.7

TABLE 3.—UNEMPLOYMENT RATES OF MALES BY COLOR AND AGE: 1951-80—Continued

Sex, year, and race	Years—									
	Total, 16 and over	16 and 17	18 and 19	20 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 and over	14 and 15
1955.....	8.8	14.8	12.9	12.4	8.6	8.2	6.4	9.0	7.1	12.1
1956.....	7.9	15.7	14.9	12.0	7.6	6.6	5.4	8.1	4.9	13.0
1957.....	8.3	16.3	20.0	12.7	8.5	6.4	6.2	5.5	5.9	14.1
1958.....	13.8	27.1	26.7	19.5	14.7	11.4	10.3	10.1	9.0	13.0
1959.....	11.5	22.3	27.2	16.3	12.3	8.9	7.9	8.7	8.4	12.7
1960.....	10.7	22.7	25.1	13.1	10.7	8.2	8.5	9.5	6.3	13.3
1961.....	12.8	31.0	23.9	15.3	12.9	10.7	10.2	10.5	9.4	14.3
1962.....	10.9	21.9	21.8	14.6	10.5	8.6	8.3	9.6	11.9	15.2
1963.....	10.5	27.0	27.4	15.5	9.5	8.0	7.1	7.4	10.1	16.9
1964.....	8.9	25.9	23.1	12.6	7.7	6.2	5.9	8.1	8.3	19.1
1965.....	7.4	27.1	20.2	9.3	6.2	5.1	5.1	5.4	5.2	20.3
1966.....	6.3	22.5	20.5	7.9	4.9	4.2	4.1	4.4	4.9	20.0
1967.....	6.0	28.9	20.1	8.0	4.4	3.1	3.4	4.1	5.1	24.1
1968.....	5.6	26.6	19.0	8.3	3.8	2.9	2.5	3.6	4.0	26.0
1969.....	5.3	24.7	19.0	8.4	3.4	2.4	2.4	3.2	3.2	22.1
1970.....	7.3	27.8	23.1	12.6	6.1	3.9	3.3	3.4	3.8	29.0
1971.....	9.1	33.4	26.0	16.2	7.4	4.9	4.5	4.7	3.4	32.2
1972.....	8.9	35.1	26.2	14.7	6.8	4.8	3.8	4.6	6.9	31.8
1973.....	7.6	34.4	22.1	12.6	5.8	4.0	3.2	3.1	3.6	34.1
1974.....	9.1	39.0	26.6	15.4	7.2	4.1	4.0	3.6	5.6	37.9
1975.....	13.7	39.4	32.9	22.9	11.9	8.3	9.0	6.1	9.5	38.6
1976.....	12.7	37.7	34.0	20.7	11.0	7.3	7.2	6.2	9.3	41.3
1977.....	12.4	38.7	36.1	21.7	10.6	6.1	5.2	6.4	8.3	37.4
1978.....	10.9	40.0	30.8	20.0	8.8	4.9	5.0	4.4	7.1	37.5
1979.....	10.3	34.4	29.6	17.0	8.6	5.8	5.2	4.8	6.3	39.8
1980.....	13.3	37.7	33.0	22.3	12.5	7.8	6.6	6.0	8.8	43.2

Source: "Employment and Training Report of the President," transmitted to Congress 1981, table A-30, p. 166.

For adult males the situation is much more promising. In the early 1950's the rates for most of the age groups were close to 1, and over the period between 1954-80 the rates for males over 25 trended steadily downward, with the amount of decline increasing steadily with age. For older men (55+), the sharp declines are mostly due to both greater early and greater total retirement. However, for the group 25-54 increases in early retirement can account for only a small fraction of the decline. This decline may be reflecting, at least in part, UNUE growth. The other factor stressed by researchers in this area is the easing of eligibility criteria for entry into the social security disability benefit program. However, this factor cannot explain all of the decline. The fraction of those outside the labor force who give "ill and disabled" as the reason is observable in the CPS data over this period, and its growth can account for less than half of the decline in the labor force participation of males 25-54. And part of the growth in the "ill and disabled" category itself could be due to growth in UNUE participants, who might give this as the reason for not participating in the above-ground economy.

As with the employment level analysis, we will err in the direction of overstating the growth in the UNUE by assuming that the entire decline in participation of males 25-54 was due to growth in full-time UNUE participants. Between 1950 and 1982, the rate fell by 3.0 percentage points. During 1981, the labor force of males 25-54 as measured by the CPS averaged 38.7 million. If the measured

labor force participation rate had been 3 percentage points higher, the measured labor force would have been 39.9 million. The difference between these two figures, 1.2 million, is our estimate of the increase in male full-time UNUE participants as reflected in the decline in the labor force participation rate of males 25-54. Taking one-half of this estimate for females, gives 1.8 million as our estimate of UNUE growth for both sexes.

Trends in unemployment rates are much more difficult to relate to trends in the UNUE. Many factors on both the demand and supply sides of the labor market influence measured unemployment rates. Also changes over the business cycle are much larger than trends and only very large uptrends can be related to UNUE growth.

Indeed only for Black male teenagers do the data reveal a pronounced uptrend. Studies have shown part of this trend (from 1950-70) is related to the large shift of Black teenagers to areas outside the South where higher wage rates were accompanied with higher unemployment rates.¹³ However, the uptrend since 1970 has defied explanation and there is a possibility that it, as well as the decline in their labor force participation rate, are related to growth in UNUE activities among Black teens. One study showed that intensive questioning of the Black teenager himself (instead of his mother as with the CPS) yields a much higher labor force participation rate.¹⁴ We will assume that all of the increase in the unemployment rate and the decrease in the labor force participation rate of Black male teenagers during the 1970's reflects increased UNUE activity. In order to adjust for differences in the stage of the cycle, we compared 1967 and 1979 and took the difference in unemployment rates (and labor force participation rates) between those 2 years as measuring the effect of UNUE growth over the period. The unemployment rate increase implies a growth of 41,000 Black teenage males in the UNUE, and the labor force participation decline implies 90,000 more.

Estimates of UNUE Growth

Table 4 presents the components of full-time UNUE growth estimated from the analysis of the various CPS series. Altogether it is estimated that full-time UNUE participants increased by 4.4 million between the 1950's and 1981. This amounted to 4.1 percent of total employment in 1981—i.e., employment in the above-ground economy plus our estimate of the full-time UNUE.¹⁵ Thus in terms of people who would consider the UNUE their "major activity," it does not appear that it grew by that much between the early 1950's and the present. Over a 25-30 year period, the average annual

¹³ Dave M. O'Neill, "Racial Differentials in Teenage Unemployment: A Note on Trends," *Journal of Human Resources*, Spring 1983.

John Cogan, "The Decline in Black Teenage Employment: 1950-70," *American Economic Review*, September 1982.

¹⁴ Richard Santos, "The Employment Status of Youth" in *Pathways to the Future*, Center for Human Resource Research, The Ohio State University, January 1980.

¹⁵ Total above-ground employment for 1981 was taken as, total wage and salary workers on nonagricultural payrolls plus self-employed workers as reported to the Census plus wage and salary workers in agriculture. Since a good part of full-time UNUE growth is captured by the CPS Employment series, their statistic on total employment only understated the growth in 1981 by 2 percent—i.e., the part due to labor force participation and unemployment biases.

growth rate in total employment was about 0.2 of a percentage point higher because of the growth in the full-time UNUE over this period.

TABLE 4.—*Estimated increases in full-time UNUE participants, 1950's to 1981*

	[By source of estimate]	Thousands
Employment level		2,550
Wage and salary		1,800
Self-employed		700
Not in labor force		1,890
Adult male		1,200
Adult female		600
Black teen		90
Unemployed: Black teen		41
Total		4,431

As a percentage of the economy's total output, the growth in the full-time UNUE may be larger because we expect that full-time UNUE operatives, especially those in the illegal sources sector, will have net incomes substantially larger than the average above-ground workers. How *much* more, is difficult to say. The IRS estimated that the illegal source sector's net income was 1.7 percent of the official GNP in 1976. This percentage implies on illegal source UNUE of \$50 billion in 1981. If we assume this was all provided by full-time UNUE participants, then we can develop an interesting range for an estimate of the percentage of total output in 1981 that is represented by our full-time UNUE growth of 4.4 million workers.

We will assume that the average full-time participant in the illegal source sector earns between \$50,000 and \$100,000 a year, and the average legal source participant between \$20,000 and \$30,000 a year. On those assumptions and using the IRS estimate for the illegal sector, the growth of output in the full-time UNUE between 1950 and 1981 came to between 4.0 and 5.7 percent of total output (i.e., official GNP plus our estimate of full-time UNUE output).¹⁸

All the foregoing refers only to growth in the full-time UNUE. We have no way of directly measuring the part-time UNUE in the CPS. However, it is possible to make some interesting and useful statements about plausible limits on the overall UNUE given our estimates of the full-time UNUE.

Table 5 shows estimates of the growth in the full-time UNUE *plus* the part-time UNUE as a percentage of total output in 1981. The table shows the assumptions that are required about the size of the part-time UNUE to arrive at each percentage. We assume that the average part-time UNUE participant puts in one-third of a full year at his UNUE activities and earned \$5,000 for it in 1981. This was about one-third of the average earnings of production workers in private nonagricultural industries in 1981.

¹⁸ The 4.0 figure for total output which is below the 4.1 figure based only on total employment, reflects the share of capital included in official GNP. Presumably the UNUE is less capital intensive than the above-ground economy, so this is a plausible result. There is no way to know how much capital resources are used in the UNUE.

TABLE 5.—ESTIMATES OF THE TOTAL UNUE AS A PERCENT OF TOTAL OUTPUT,¹ FOR VARIOUS ASSUMPTIONS ABOUT EARNINGS RATES AND NUMBER OF PART-TIME UNUE WORKERS

	Number of part-time UNUE participants (thousands)		
Average earnings rates in the illegal and legal sector for full-time UNUE participants ...	9,000	18,000	45,000
\$50,000 and \$20,000	5.2	6.6	10.4
\$100,000 and \$30,000	6.7	8.0	11.8

¹ Official GNP plus our estimate of the total UNUE.

Our range of estimates go from 5.2 percent to 11.8 percent. The largest estimate resulting from the highest assumptions about earnings rates in the full-time UNUE and about the number of above-ground wage and salary workers who work in the UNUE on-the-side. Even with the very largest, and very unlikely, estimate of the number of part-time UNUE workers (45 million, about 50 percent of wage and salary workers in the above-ground economy) the growth in the UNUE since 1950 only amounted to 11.8 percent of total output in 1981.

CONCLUDING COMMENTS

Overall, our analysis suggests that the U.S. UNUE may not be nearly as large as indicated by some researchers and by the popular media. The findings imply that over the 30-year period the average annual growth rate of total output in the economy exceeded the growth in official GNP by about 0.2 percentage points (using the midpoint of the estimates in Table 5). By 1981 this annual relative growth had cumulated to about 7.5 of total output. If we assume that the size of the UNUE was negligible in 1950, then our estimate could also be taken as a measure of the size of the current UNUE, and it does not appear that large—7.5 percent is at the lower end of the range of existing estimates.

This finding also implies that current lost IRS revenues from the UNUE (i.e., that part of the UE that is not measured by GNP) may not be as large as thought. Also, concern about serious biases in the GNP and other statistics, at least at present, may be overblown. As noted, there are two studies that also come to our conclusion. One of these is particularly interesting because it used completely different kinds of data.¹⁷ It was a survey of households asking consumers how much they spent on goods and services purchased from informal vendors and/or people who looked like they were working on the side. Their data and findings are relevant only for the legal-source UE, but for that segment the study suggests a very low level of activity—less than 1 percent of GNP in 1981.

In closing, we comment on downward biases in our estimates and on future research. As noted, our estimates, although upward biased on all other accounts, may be downward biased because the censuses may not cover all the UNUE participants who are missed by the CPS. One way to make an estimate of the size of this bias is

¹⁷ James D. Smith, "The Measurement of Selected***," op. cit.

to assume that most of these unapproached individuals are in dwelling units that refuse to participate in the CPS. For example, an illegal alien may be working in the UNUE and be living with a family who refuses to participate in the CPS and when the census is taken reports all family members but not him. On this assumption the downward bias is probably not more than 20 percent. This assumes that one-half the increase in the CPS refusal rate (1954-81) was associated with households that were harboring a member of the UNUE who was not reported in the decennial census. Thus, we would raise our midpoint estimate in Table 5 from about 7.2 to about 8.6 percent. Another possible source of downward bias is the BLS series on wage and salary employment. If there was an up-trend in quality of coverage that exceeded the trend in the population census coverage, then a downward bias would result. Finally, a downward drift in adult unemployment rates in the above-ground economy might have masked some growth in the full-time UNUE.

The above analysis suggests that if the legal source UNUE is large, then it is likely composed mainly of on-the-side workers who have a regular job in the above-ground economy. These individuals will be extremely hard to detect by methods that seek to survey them directly. The approach that focuses on household expenditures data can be very useful in this situation. If a large, comprehensive, and longitudinal survey of households could be made and questions asked, similar to those used by the University of Michigan study, then some additional progress could be made on the question of the size of the legal source UE.

